

REMARKS

Claims 5-20 are currently pending in the application. By this amendment, claims 5, 6, 8, and 10 are amended and claims 12-20 are added for the Examiner's consideration. Support for the amended and added claims is provided in at least Figure 2 of the specification and pages 12 and 13. The specification is amended to indicate that the present application is a continuation of U.S. Application Serial No. 10/105,377. No new matter is added. Reconsideration of the rejected claims in view of the above amendments and the following remarks is respectfully requested.

Examiner Interview

Applicants appreciate the courtesies extended by the Examiner during the personal interview of May 5, 2004. During this interview, the distinguishing features of the claimed invention over the known art was discussed, in addition to the obvious-type double patenting and 112, 2nd paragraph rejections. In view of the discussion, the claims should now be in condition for allowance.

Objection to Specification

The specification has been objected to for incorrectly noting that the present application is a divisional application of serial no. 10/105,377. The specification has been amended in order to disclose that the present application is a continuation application of serial no. 10/105,377. The objection to the specification is requested to be withdrawn.

Additionally, a translation of JP 03-230,843 is provided herein.

35 U.S.C. §112 Rejection

Claims 5-11 were rejected under 35 U.S.C. §112, 2nd paragraph. The Examiner is not clear as to what is the "stepped feeder head portion", and where antecedent basis is in the specification. Although this feature was discussed during the interview, Applicants

now delete reference to a stepped portion in order to broaden the breadth of the claim. This deletion should not be considered a narrowing amendment.

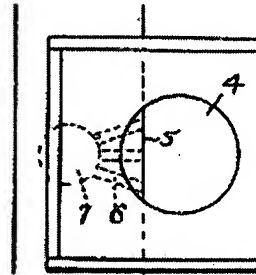
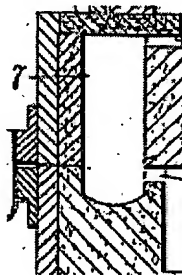
Accordingly, Applicants respectfully request that the rejection over claims 5-11 be withdrawn.

35 U.S.C. §102 Rejection

Claims 5, 6, 10 and 11 were rejected under 35 U.S.C. §102(b) for being anticipated by either Thomes or Mezger. This rejection is respectfully traversed.

As discussed during the interview, the invention is directed to a reduction casting apparatus or molding die for performing a casting while, in certain instances, an oxide film formed on a surface of the molten metal is reduced by allowing the molten metal and a reducing compound to be contacted with each other. The apparatus or molding die includes a feeder head portion and a runner which are arranged in an upstream side of the cavity for pouring the molten metal into the cavity in a turbulent flow. The runner has a smaller cross section area of flow passage than that of the stepped feeder head portion, in addition to a higher heat insulating property. In embodiments, the molten metal is provided to the cavity in a turbulent flow.

However, as discussed during the interview, the features of the claimed invention are not shown in either Thomes or Mezger. In Thomes, for example, the feeder 7 does not have a different insulating property than that of the runner. This same insulating properties is shown graphically in Figures 1 and 2, as partly reproduced below.

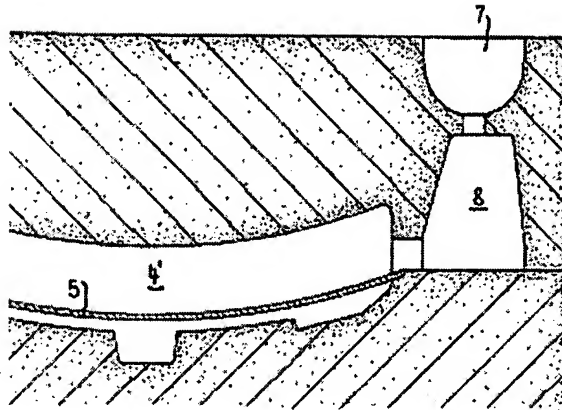


Additionally, Applicants submit the Thomes reference is designed to have a feeder head portion that has the capacity to hold enough molten metal to fill the cavity without any additional aid. This flow into the feeder may be turbulent. However, this flow is not a turbulent in the cavity. According to Thomes, the feeder head portion is insulated to ensure that the molten metal will not harden or chill, and that the body of the very hot metal is brought close to the opening of the casting causing the metal to flow through the spaces in the matrix more readily and uniformly. (Col. 2, lines 10-25.) In fact, the die of Thomes appears to have been developed in view of the problem set forth in col. 1, lines 81-85, as noted below:

As the cooling and “churning” take place the metal tends to lose its fluidity and to become thick and pasty so that it does not flow readily to fill the voids in the casting.

This is contrary to the claimed invention. In the present invention, the reason why the feeder is insulated is to prevent the molten metal from solidifying firstly in the vicinity of the feeder, in view of the flow solidification of the molten metal, the directional solidification of the molten metal or the like. On the other hand, a relation on insulation between the cavity and the feeder is not indicated clearly by Thomes.

As to Mezger, a runner is provided between the feeder head 7 and a feeder 8. However, the feeder 8 has a partial conical shaped and allows molten metal to flow uniformly via a gate into the cavity. As discussed during the interview, and shown in Figure 2 (partly reproduced below), a preform or separating sheet 5 is at the same level as the gate, which does not relate to a turbulent flow in the cavity.



In addition, turbulent flow of the molten metal would not be generated due to the configuration of the gate and feeder. That is, the gate is positioned perpendicular to the feeder and substantially at a same level of the cavity. This allows the molten metal to flow sideways into the cavity, not perpendicular, thus in a more laminar flow pattern. Also, Mezger does not have a different insulating property than that of the runner.

Accordingly, Applicants respectfully request that the rejection over claims 5, 6, 10 and 11 be withdrawn.

35 U.S.C. §103 Rejection

Claims 8 and 9 were rejected under 35 U.S.C. §103(a) for being unpatentable over Thomes or Mezger in view of admitted prior art. Claim 7 was rejected under 35 U.S.C. §103(a) over Thomes or Mezger in view of Mclear. These rejections are respectfully traversed.

Claims 7-9 are dependent claims, depending from a distinguishable base independent claim. Accordingly, claims 7-9 are also in allowable condition.

Accordingly, Applicants respectfully request that the rejections over claims 7-9 be withdrawn.

Double Patenting Rejection

Claims 5-11 were provisionally rejected under the judicially created doctrine of obvious-type double patenting over:

1. Claims 1-9 and 19-34 of co-pending application number 10/115,141, or
2. Claims 1-35 of co-pending application number 10/166,743, or
3. Claims 3-5 and 16, 17 of co-pending application number 10/097,483, or
4. Claims 1, 3-10, 20, 21, and 23-31 of co-pending application number 09/852,267, or
5. Claims 1-3, 5-15 and 18-26 of co-pending application number 09/828,875.

Applicants respectfully traverse this rejection. The invention is directed to an apparatus and recites a different heat insulating property as well as a turbulent flow, in addition to other elements. However, these features are not obvious in view of the above references.

After careful review it is noted that the claims above (used for the judicially created doctrine of obvious-type double patenting rejection) are directed to various casting methods having different features. However, each of the claimed inventions recited in the present application are directed to a casting die or casting apparatus. These claims are clearly distinct from the above referenced claims and, in Applicants' opinion, would have been subject to a restriction requirement if placed in the same application, i.e., would not be obvious variants.

By way of one example, MPEP 806.05(e) states, in part,

... Process and apparatus for its practice can be shown to be distinct inventions, if either or both of the following can be shown: (1) that the process as claimed can be practiced by another materially different apparatus or by hand, or (2) that the apparatus as claimed can be used to practice another and materially different process....

Accordingly, this rejection should be withdrawn.

Added Claims

Claims 12-20 are added for the Examiner's consideration. Claims 12-15 find supporting at least Figure 2, which shows the feeder 15 and gate 15a. These claims are dependent claims and are provided, in embodiments, to further define a stepped portion

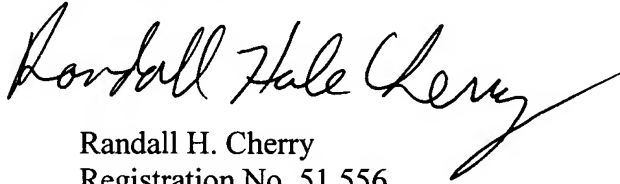
for claim differentiation. These claims, in addition to being dependent on distinguishable base claims, also include allowable subject matter.

Claim 16 is an independent claim and also includes allowable subject matter, as discussed during the interview. This claim finds support in at least Figures 2-4, for example. Claims 17-20 are dependent claims depending from claim 16. These claims are also distinguishable for the reasons of claim 16.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 23-1951.

Respectfully submitted,



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